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NOTES FROM THE JOURNAL OF A BOTANIST IN EUROPE.

BY W. G. FARLOW, M.D.

PART II. NORWAY, ETC.

I LANDED at Christiania upon a high holiday, one rather striking to a pilgrim from the new world. The people were celebrating the two thousandth birth-day of Norway! I found Professor Schübeler at home; and the next day he showed me through the Botanic Garden and the University. Although the Garden is poor enough compared with that of Lund, yet it is good considering the latitude, and the conservatories appeared to be as large and as well filled as those at Cambridge. The university buildings are well situated, and I should think more extensive than those at Cambridge. The Professor is a man of boundless energy, and is making the most of narrow means and a poor climate. He gave me a list, by no means a long one, of all the American trees in the garden. It would be an easy and excellent thing for an American correspondent to double and triple their number. Seeds and cones are desired rather than young plants, for obvious reasons. There is the same confusion in the north of Europe of our two spruces as that which prevails, or till lately prevailed, in the nurseries and plantations at home. The plantation of "*Abies alba*" which Professor Agardh showed me at Lund was mostly in fruit, and every tree of it *A. nigra*; while here, Prof. Schübeler's only tree of "*Abies nigra*," also in fruit, proved to be *Abies alba*. The herbarium here is of no special consequence.

What most interested me, besides a few algæ given me from Lyngbye's collection, valuable as souvenirs, was a museum of the economical products of Norway, especially the grains, entirely prepared by the present Professor; and a very interesting chart made by him of the arable lands of Norway. The cultivable grounds appeared as mere lines, almost as narrow as the rivers on a map. As I subsequently found, fully nine-tenths of the country consists of steep rocky mountains, and only the banks of the rivers are fertile. The perseverance of the people is wonderful. Every spot at all level is closely cultivated. Tracts of half or a quarter

of an acre, up on the sides of the mountains, are covered with barley; and available spots on the fiords, accessible only by some miles of hard rowing, are planted with oats. The grain is stacked in little heaps in the fields and a sort of rail fence is made to which the hay is fastened to dry. In many places the hay has to be carried down the mountains on the peasants' backs. I can't imagine how they get hay enough to keep their cattle through the winter. Southern Norway, moreover, is more like New England than any country I have seen, only more mountainous. The houses are wooden and painted white, and there are rail fences. Cherries and a very few apples are the only fruits. The wild strawberries are delicious, but the natives prefer the molteberry which is quite insipid. It flourishes high up in the mountains where only *Salix glauca* and *Betula nana* grow. I was surprised to find that the *Abies excelsa*, or Norway spruce, is not a mountain tree. It is not a handsome tree till you reach the valleys of southern Norway. *Pinus sylvestris* grows alone on the higher mountains and is far from beautiful. The poverty of the forests in species is striking; nothing but birches, alders, and one or two conifers.

The herbaceous plants were more varied, and very attractive to me; possibly the more so because I had to puzzle them out with the only book I had, Hartmann's Flora in Swedish, which I can't read, but could guess at the botanical terms. Fortunately at the top of the Fille-field I met a botanist who spoke a little German. *Erica tetralix* is to me the most beautiful plant in Norway. *Digitalis purpurea* here grows on the edge of the glaciers and *Gentiana nivalis* by the roadside. *Aconitum septentrionale* abounds everywhere. I was surprised to find that the hood of every flower, in a hundred or more I examined, had been perforated by some insect, which in this way sought the honey.

I hoped to find some good algæ, especially at Molde, but was unsuccessful. After two days' contemplation of *Fucus nodosus* and *vesiculosus* in various forms, I passed on to Bergen, the rainiest town in Norway and, I believe, in the world. There the water is warmest when the wind is north, owing to the Gulf Stream, and, whichever way the wind blows, the odors are horrible.

As to the scenery, it is always pleasant, sometimes very grand. The Romsdal is a very wild and gloomy pass about twenty miles long, and perfectly dripping with lovely waterfalls and cascades.

The peaks are sharper than anywhere else and covered with snow. The view of the Romsdal mountains from Molde is the finest distant view I saw in Norway, where distant views are scarce owing to the narrowness of the valleys. From Bergen, I went up the Hardanger Fiord and into the Sör Fiord to Odde. The fiords are the finest things in Norway, mountains two or three thousand feet high, sometimes more, coming straight down into the greenest of water. You sail on for hundreds of miles, the scenery varying from grand to grander. The Sör Fiord is particularly fine, the water is narrow and the mountains black and steep, with the Folgefond glacier on one side hanging over the cliffs, and coming down the ravines. From Odde I visited the Skaggindäl foss, a pretty waterfall pouring into a beautiful lake; and a glacier in the vicinity, the first I had ever seen close at hand. Notwithstanding all I had read and heard I was astonished at the color of the ice which, without exaggeration, was as deep as sulphate of copper. It advanced fifty feet last year.

At St. Petersburg the attractions for the botanist centre in the Botanical Garden, with its twenty-five well filled conservatories, a collection of hardy plants and trees of remarkable extent, considering the climate, and a large herbarium and library attached—all under the immediate care of Dr. Regel, formerly of Zurich, a scientific botanist as well as gardener. Dr. Trautvetter, however, is the official head of the establishment. There is a smaller but a choice herbarium at the Imperial Academy of Sciences, which since Ruprecht's death has been in charge of Dr. Maximowicz, who has travelled and collected largely in Mandchuria and Japan, and is now engaged upon a flora of the latter country. Though still young he has a high reputation as a botanist, and is an admirable man. To add to my satisfaction and comfort, he spoke English with facility. My special object was to examine the algæ of northwest America described by Ruprecht. These are in the Academy's herbarium, in the condition in which they were left by him, without much arrangement.

Of Moscow, with its domes and shrines and dingy splendors, I have nothing to say botanically; and the same of the continuous railway journey of one thousand three hundred miles from thence to Berlin, without sleeping cars. On arising I found to my disgust that the three emperors were expected in two days, and not a room to be had in any hotel. At length, however, I found a lodg-

ing close to the Linden. On calling at Professor Braun's I learned that he was in Brahdenburg, happily away from the heat and crowd. Never before have I so suffered with the heat, which for six days has been intense; so great that walking was almost impossible, and the dust made the riding almost insufferable. The crowd has been growing greater and greater, but culminated last night when there was a serenade by seven hundred musicians in front of the palace. I think I should enjoy Berlin in winter, but now I am tired of the heat and dust, and emperors; and shall leave at once for Cologne on my way to Strasburg.

REVIEWS AND BOOK NOTICES.

NEW GERMAN BOTANICAL MANUALS.*—The two botanical text-books named below have now superseded all others in Germany. The first, uniform with a zoology by the same author, is admirably adapted for schools and colleges, being compact, clearly and concisely written, and copiously illustrated with woodcuts. All the subjects of any general botanical interest are touched upon, and, for this reason, it is an excellent book for amateurs who wish to keep up to the present state of the science without taking the time and trouble necessary for learning, practically, microscopic and systematic details. The greatest advance in botany, recently, has been made in the departments of anatomy and lower cryptogams where, unfortunately, more knowledge of the microscope is necessary than is possessed by the majority of botanical readers. In the book of Thorné, the frequent woodcuts take the place of microscopic work as far as such a thing is possible. On the whole, this is the best elementary botanical text-book which has yet been published in Germany.

The second work, although called a text-book, partakes much more of the character of an encyclopædia. In consequence partly of the high reputation of the writer as a vegetable physiologist, the book has had an almost unprecedented sale, the third edition being already nearly exhausted and a separate edition of the second part, relating to vegetable physiology, having just made its

* Lehrbuch der Botanik von Dr. Otto Wilhelm Thorné 2te auflage 1872. Lehrbuch der Botanik von Prof. Julius Sachs. 3te auflage 1873.